MJE172

Low voltage high speed switching NPN transistor

Features

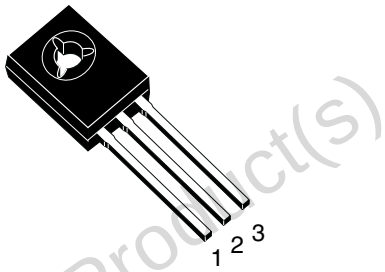
- High speed switching
- NPN device

Applications

- Audio amplifier
- High speed switching applications

Description

This device is an NPN low voltage transistor manufactured using epitaxial planar technology and housed in a SOT-32 plastic package. It is designed for low power audio amplifiers and low current, high speed switching applications.



SOT-32

Figure 1. Internal schematic diagram

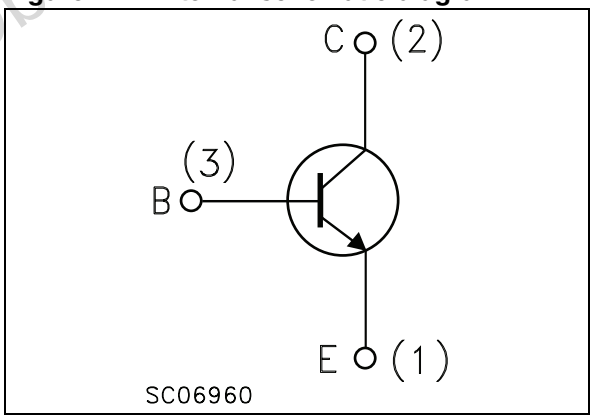


Table 1. Device summary

Order code	Marking	Package	Packaging
MJE172	MJE172	SOT-32	Tube

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-emitter voltage (I_B = 0)	80	V
V_{CBO}	Collector-base voltage (I_E = 0)	100	V
V_{EBO}	Base-emitter voltage (I_C = 0)	7	V
I_C	Collector current	3	A
I_{CM}	Collector peak current (t_P < 5 ms)	6	A
I_B	Base current	1	A
I_{BM}	Base peak current (t_P < 5 ms)	2	A
P_{TOT}	Total dissipation at $T_c \leq 25$ °C	12.5	W
T_{stg}	Storage temperature	-65 to 150	°C
T_J	Total power dissipation at $T_c \leq 25$ °C	150	

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance junction-case max	10	°C/W
$R_{th\text{-}amb}$	Thermal resistance junction-ambient max	83.3	°C/W

2 Electrical characteristics

T_{case} = 25 °C unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB}= 100 V V_{CB} = 100 V, T_c = 150 °C			0.1 0.1	µA mA
V_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 7 V			0.1	µA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 10 mA	80			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 0.5 A I_B = 50 mA I_C = 1.5 A I_B = 0.15 A I_C = 3 A I_B = 0.6 A			0.3 0.9 1.7	V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 1.5 A I_B = 0.15 A I_C = 3 A I_B = 0.6 A			1.5 2	V V
$V_{BE(on)}$ (1)	Base-emitter on voltage	I_C = 0.5 A V_{CE} =1 V			1.2	V
h_{FE}	DC current gain	I_C = 0.1 A V_{CE} = 1 V I_C = 0.5 A V_{CE} = 1 V I_C = 1.5 A V_{CE} = 1 V	50 30 12		250	
f_T	Transistor frequency	I_C = 0.1 A V_{CE} = 10 V f=10 MHz	50			MHz
C_{CBO}	Collector-base capacitance (I_E=0)	V_{CB} = 10 V f= 0.1 MHz			60	pF

1. Pulse test: pulse duration ≤ 300 µs, duty cycle ≤ 1.5 %.

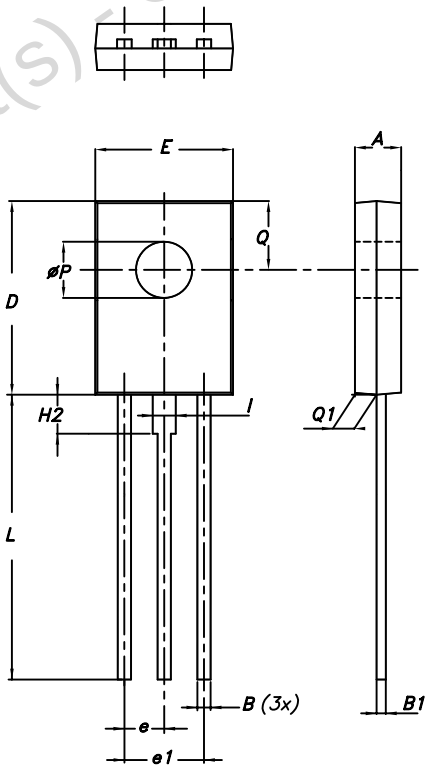
3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: *www.st.com*. ECOPACK® is an ST trademark.

Table 5. SOT-32 (TO-126) mechanical data

Dim.	mm.		
	Min.	Typ.	Max.
A	2.40		2.90
B	0.64		0.88
B1	0.39		0.63
D	10.50		11.05
E	7.40		7.80
e	2.04	2.29	2.54
e1	4.07	4.58	5.08
L	15.30		16
ØP	2.90		3.20
Q		3.80	
Q1	1		1.52
H2		2.15	
I		1.27	

Figure 2. SOT-32 (TO-126) drawing



4 Revision history

Table 6. Document revision history

Date	Revision	Changes
22-Sep-2003	4	
08-Aug-2011	5	– Part number MJE172 has been moved to a separate datasheet. – Minor text changes